

## **REMARKS**

### Brief Discussion of Claims:

The subject invention as presented in the pending claims defined a toothbrush in product Claims 7, 8, 25 and 31-37 and methods of reducing risk of damage to teeth and gums in Claims 38 and 40 and a method of teaching how to avoid applying unsafe pressure to teeth and gums in Claim 39.

Independent product Claim 31 defines a motorless toothbrush where the head part is releasably restrained in a first orientation by a catch means in or on the hinge, which head part when released can freely flop in various orientations other than said first orientation. When the toothbrush has its head part in a freely flopping mode, it is deemed inoperative for use as a toothbrush.

In Claim 32 the released head can be manually returned to its first orientation, where the catch means restrains the head part in the first orientation for normal use.

In Claim 33 the hinge/catch means comprises a spring-biased detent.

In Claim 34 the head part is coupled to the handle part only by the hinge.

Independent product claim 35 defines a motorless toothbrush where the head part is coupled to the handle part only by the hinge, and the hinge comprises a bi-stable spring element.

In Claim 36 the released head part will be oriented at least 10° rearward from its first orientation.

In Claim 37 the bi-stable spring would flip and return the released head part from its second orientation forward to its first orientation.

In Claims 38-40 there are defined methods using a toothbrush generally as defined in Claim 31.

B. Discussion of the Rejections

The rejection of claims 28-30 under 35 U.S.C. 102(b) as being anticipated by Hukuba and the rejection of claims 1-10, 14-18, 25 and 27 under 35 U.S.C. 103(a) as being obvious over Hukuba are noted. The rejected claims have been amended in part and are now replaced by new claims 31-40 and amended claims 7, 8 and 25.

It is respectfully submitted that all of the now-pending claims are patentably distinguishable over Hukuba.

The chart below demonstrates certain of the differences and distinctions between representative pending claims and the Hukuba disclosure.

Claim 31	Hukuba
- motorless toothbrush	- electric motor driven toothbrush
- head part, upon release from first orientation, can flop freely	- head part is always coupled to the motor and can never flop freely

Claim 35	Hukuba
- motorless toothbrush	- electric motor driven toothbrush
- head part connected to handle part only via hinge	- head part is coupled to both the handle part and to the motor

Furthermore, as discussed in the prior responsive amendment dated May 7, 2004, the remarks and arguments of which are being incorporated by reference into the present response, Hukuba teaches merely that the stroke of the head will be reduced as a result of excess force on the bristles. However, the toothbrush in Hukuba, when it experiences excess force, continues to be operable and in fact becomes more dangerous, because it is now operating while there is greater force of the bristles on the teeth and gums.

In contrast, the present invention renders the toothbrush inoperative when excessive force is applied, by causing the head to move or flop or snap into a non-usable orientation. While the new toothbrush is inoperative, further pressure or scraping damage to the teeth and gums is not possible. In certain embodiments the head can be returned to its operative orientation and re-used unless and until excessive force is applied.

In view of the structural differences and objects and results, the present invention is totally different from Hukuba. The structure in Hukuba cannot satisfy or anticipate any of the pending claims under 35 U.S.C. 102, and also these claims cannot be obvious under 35 U.S.C. 103 from Hukuba, since no structure, operation, object or result in Hukuba is similar or even related to the present invention.

The remarks of the Examiner in the outstanding office action have been studied. It is believed that the issues raised are not applicable to the newly amended claims which now define more specific structure of the present

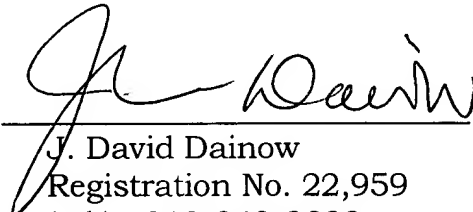
invention.

As a final point, it is respectfully submitted that the Examiner's suggestion that Hukuba is at times disabled or inoperative, is not correct. It is applicant's understanding that Hukuba is never disabled or inoperative; it merely changes from fully operative in one mode (full stroke) to fully operative in another mode (reduced stroke).

In view of the above amendments and distinctions, it is believed that all the pending claims are in condition for allowance. Accordingly, reconsideration and favorable actions are respectfully requested.

Respectfully submitted,

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## **APPENDIX**

### Listing of Claims showing Amendments:

Claims 1-6 (cancel)

Claim 7 (amended): A toothbrush according to claim 31 wherein said predetermined threshold level of force in the range of about two to twelve ounces.

Claim 8 (original): A toothbrush according to claim 7 wherein said predetermined threshold level of force is about six ounces.

Claim 9 (cancel)

Claim 10 (withdrawn): A toothbrush according to claim 9 wherein said hinge further comprises at least one connecting element coupling said handle and said head.

Claim 11 (withdrawn): A toothbrush according to claim 9 wherein said spring element is a bi-stable spring having a separate first and second positions corresponding respectively to said first and second orientations of said head with respect to said handle, said bi-stable spring, when said force exceeding said threshold is applied to said head, snaps said head to said second orientation and maintains said head at said second orientation until said head is manually pushed forward until said spring snaps said head back to said first orientation.

Claim 12 (withdrawn): A toothbrush according to claim 9 11 wherein said threshold level of force is substantially the same for causing said bi-stable spring to snap from its first position to its second position and for causing said bi-stable spring to snap from its second position to its first position.

Claim 13 (withdrawn): A toothbrush according to claim 1 wherein said handle and head comprise a single continuous molded product.

Claims 14-18 (cancel)

Claim 19 (withdrawn): A toothbrush according to claim 9 wherein said hinge comprises a pre-stressed bi-stable spring having two alternative shapes, said spring in its prestressed state being generally stiff and tending to stay in such state until a force exceeding a predetermined threshold level is applied to

said spring which causes it to snap to its other shape, said spring coupled to said head and to said handle, whereby said head automatically pivots to its second orientation when a force exceeding said threshold level force is applied thereto.

Claim 20 (withdrawn): A toothbrush according to claim 19 wherein said head automatically returns to its first orientation when a force exceeding said threshold force is applied to said head in said first direction.

Claim 21 (withdrawn): A toothbrush according to claim 20 wherein said handle has a central longitudinal axis, and said bi-stable spring comprises a central strip generally parallel to said handle axis and two tension strips adjacent and generally parallel to said central strip, said central strip being resilient and in compression and having a bow configuration.

Claim 22 (withdrawn): A toothbrush according to claim 20 wherein each of said tension strips is bendable in the general area of their connection to said head.

Claim 23 (withdrawn): A toothbrush according to claim 19 wherein said hinge comprises a bi-stable spring formed as an elongated resilient dish-shaped element having a generally concave configuration and a pair of tension strips adjacent and generally parallel to said spring element, said spring element being in compression with its distal end rigidly extending from said head.

Claim 24 (withdrawn): A toothbrush according to claim 23 wherein each of said tension strips is bendable in the general area of its connection to said head.

Claim 25 (amended): A toothbrush according to claim 31 wherein said hinge comprises a yoke at said distal end of said handle, a tongue at said proximal end of said head, a pivot axis extending through said yoke and tongue, whereby said head is movable between two angular positions, said hinge further comprising restraining means releasably restraining said tongue in at least one of said positions relative to said yoke.

Claim 26 (withdrawn): A toothbrush comprising a handle, a head with bristles and a neck interconnecting said handle and said head in a predetermined first angular relationship, said head being bendable relative to

said handle about a bend axis in said neck, said neck having a predetermined stiffness wherein said neck resists bending of said head relative to said handle, said neck being bendable about said bend axis to a second angular relationship different from said first angular relationship and back again when a force is applied to said head that overcomes said stiffness of said neck.

Claims 27-30 (cancel)

Claim 31 (new): A motorless toothbrush comprising:

a- a handle part having proximal and distal ends and a longitudinal axis therebetween,

b- a head part having proximal and distal ends, a longitudinal axis therebetween and a set of bristles at said distal end, said bristles having exposed tip ends extending in a frontward direction,

c- a hinge connecting said distal end of said handle part to said proximal end of said head part,

said head part having a first orientation with respect to said handle part for toothbrush to be used in a normal state with said bristles extending generally transversely of the longitudinal axis of said head part,

said hinge including catch means for releasably holding said head part in said first orientation,

said catch means adapted to release said head part on application of a force exceeding a predetermined threshold level in a rearward direction onto said tip ends of said bristles and transferred to said head part, at which time said released head part can flop freely in various orientations different from said first orientation.

Claim 32 (new). A toothbrush according to claim 31 wherein said released head part is manually movable back to said first orientation, at which time said catch means will automatically engage and releasably hold said head part in said first orientation.

Claim 33 (new). A toothbrush according to claim 32 wherein said catch means comprises a spring-biased detent on one of said handle and head parts

and a recess into which said spring-biased detent extends in the other of said handle and head parts.

Claim 34. (new) A toothbrush according to Claim 31 wherein said head part is connected to said handle part only by said hinge.

Claim 35 (new): A motorless toothbrush comprising:

a- a handle part having proximal and distal ends and a longitudinal axis therebetween,

b- a head part having proximal and distal ends, a longitudinal axis therebetween and a set of bristles at said distal end, said bristles having exposed tip ends extending in a frontward direction,

c- a hinge connecting said distal end of said handle part to said proximal end of said head part, with said head part connected to said handle part only by said hinge,

said head part having a first orientation with respect to said handle part for use as a normal toothbrush with said bristles extending generally transversely of the longitudinal axis of said head part, and a second orientation angled rearward from said first orientation,

said hinge comprising a bi-stable spring element having first and second conditions causing said head part to flip between said first and second orientations respectively;

said bi-stable spring element adapted to urge said head part to move to and remain in one or the other of said two orientations, said bi-stable spring element flipping from said first condition to said second condition upon application of a force (i) exceeding a predetermined threshold level in a rearward direction onto said tip ends of said bristles and (ii) transferred to said head part, at which time said head part is biased by spring means to flip to and remain in said second orientation.

Claim 36. (new) A toothbrush according to Claim 35 where said second orientation is angled at least 10 degrees rearward from said first orientation.

Claim 37. (new) A toothbrush according to Claim 35 wherein said head



part is manually movable from said second orientation, upon application of a force exceeding a predetermined threshold level to said head part in said forward direction to said first orientation, at which time said head part would be biased by said spring element to flip to and remain in said first orientation.

Claim 38 (new): A method of reducing the risk of damaging tooth enamel and/or gums from brushing of a person's teeth with a toothbrush, comprising:

a- providing a motorless toothbrush including a handle part having proximal and distal ends and a longitudinal axis therebetween, and a head part having proximal and distal ends, a longitudinal axis therebetween and a set of bristles at said distal end and extending generally transversely of the longitudinal axis of said head part, said bristles having exposed tip ends extending in a frontward direction,

b- providing a hinge connecting said distal end of said handle part to said proximal end of said head part,

said head part having a first orientation with respect to said handle part for said toothbrush to be used in a normal state with said bristles extending generally transversely of the longitudinal axis of said head part,

c- providing on said hinge a catch means for releasably holding said head part in said first orientation, and

d- configuring said hinge such that upon application of a force (i) exceeding a predetermined threshold level in a rearward direction onto said tip ends of said bristles and (ii) transferred to said head part, said catch means will release said head part to flop freely in various orientations different from said first orientation.

Claim 39 (new): A method of teaching a person how to avoid applying pressure of an unsafe magnitude to teeth and/or gums while brushing his/her teeth with a toothbrush, comprising:

a- providing a motorless toothbrush including a handle part having proximal and distal ends and a longitudinal axis therebetween, and a head part having proximal and distal ends, a longitudinal axis therebetween and a set of

bristles at said distal end and extending generally transversely of the longitudinal axis of said head part, said bristles having exposed tip ends extending in a frontward direction,

b- providing a hinge connecting said distal end of said handle part to said proximal end of said head part,

said head part having a first orientation with respect to said handle part for toothbrush to be used in a normal state with said bristles extending generally transversely of the longitudinal axis of said head part,

c- providing on said hinge a catch means for releasably holding said head part in said first orientation, and

d- configuring said hinge such that upon application of a force (i) exceeding a predetermined threshold level in a rearward direction onto said tip ends of said bristles and (ii) transferred to said head part, said catch means will release said head part to flop freely in various orientations different from said first orientation.

Claim 40 (new): A method of reducing the risk of damaging tooth enamel and/or gums from brushing of a person's teeth with a toothbrush, comprising:

a- providing a motorless toothbrush including a handle part having proximal and distal ends and a longitudinal axis therebetween, and a head part having proximal and distal ends, a longitudinal axis therebetween and a set of bristles at said distal end and extending generally transversely of the longitudinal axis of said head part, said bristles having exposed tip ends extending in a frontward direction,

b- providing a hinge connecting said distal end of said handle part to said proximal end of said head part, with said head part connected to said handle part only by said hinge,

said head part having a first orientation with respect to said handle part for toothbrush to be use as a normal toothbrush with said bristles extending generally transversely of the longitudinal axis of said head part, and a second orientation angled rearward from said first orientation,

e- forming said hinge as a bi-stable spring element having first and second conditions causing said head part to flip between said first and second orientations respectively, and

f- configuring said bi-stable spring element to urge said head part to move to and remain in one or the other of said two orientations, said bi-stable spring element flipping from said first condition to said second condition upon application of a force (i) exceeding a predetermined threshold level in a rearward direction onto said tip ends of said bristles and (ii) transferred to said head part, at which time said head part is biased by spring means to flip to and remain in said second orientation.